

WHAT IS CLAIMED IS:

- SJ*
1. An apparatus for receiving data comprising:  
an edge processor operative to make decisions using a plurality of edges of a  
5 received data stream; and  
a communication circuit coupled to the edge processor, said communication  
circuit operative to convert communications with the edge processor from a first format  
to a second format.
- 10 2. The apparatus according to claim 1, wherein said first format include uni-  
directional signaling.
- 15 3. The apparatus according to claim 1, wherein the second format includes  
simultaneous bi-directional signaling.
4. The apparatus according to claim 3, wherein the first format includes uni-  
directional signaling.
- 20 5. The apparatus according to claim 1, wherein the second format include  
differential simultaneous bi-directional signaling.
6. The apparatus according to claim 1, wherein said communication circuit  
comprises a plurality of current sources, said current sources coupled to form  
differential pairs, said differential pairs operative to convert a differential voltage to a  
25 differential current, each of said differential pairs operatively coupled to a resistor.
7. The apparatus according to claim 6, wherein said differential voltage is less  
than a safe operating voltage of the receiver.

8. An apparatus for converting signaling between a transmitter and an edge-based receiver from unidirectional signaling to differential simultaneous bi-directional signaling comprising:

- 5 a plurality of current sources, said current sources coupled to the edge-based receiver to form differential pairs, said differential pairs operative to convert a plurality of differential voltages to a plurality of differential currents; and
- a plurality of resistors coupled to each of the differential pairs to sum said differential currents to yield a single differential load.

10 9. The apparatus according to claim 8, wherein said plurality of differential voltages comprise a plurality of differential voltages from a transmitter and a plurality of differential voltages from a receiver, respectively.

15 10. The apparatus according to claim 6, wherein said differential voltages are less than the safe operating voltage of said receiver.

11. A system for performing signaling between a transmitter and an edge based receiver comprising:

- 20 a transmitter including a current mode driver, a high impedance output and a dual end termination;
- an edge based receiver including an edge processor operative to make decisions using a plurality of edges of a received data stream; and
- 25 a conversion circuit disposed between the edge based receiver and the transmitter, said conversion circuit operative to convert signaling between the transmitter and the receiver from a first format to a second format.

12. The system according to claim 11, wherein said first format includes unidirectional signaling.

13. The system according to claim 11, wherein said second format includes simultaneous bi-directional signaling.

14. The system according to claim 11, wherein said second format includes  
5 differential simultaneous bi-directional signaling.

15. The system according to claim 14, wherein said first format includes unidirectional signaling.

10 16. The system according to claim 15, wherein said conversion circuit operates as a voltage/current subtraction circuit.

15 17. The system according to claim 15, wherein said conversion circuit further comprises:

15 a plurality of current sources, said current sources coupled at said edge-based receiver to form differential pairs, said differential pairs operative to convert a plurality of differential voltages to a plurality of differential currents;

a plurality of resistors coupled to each of the differential pairs, said plurality of resistors to sum said differential currents to yield a single differential load.

20 18. The system according to claim 15, wherein said conversion circuit further comprises:

25 a plurality of current sources coupled to the edge-based receiver to form a plurality of differential pairs, said plurality of differential pairs operative to convert a plurality of differential voltages to a plurality of differential currents; and

a plurality of resistors coupled to each of the plurality of differential pairs to sum said plurality of differential currents to yield a single differential load.

30 19. A method for converting a signaling format between a transmitter and an edge-based receiver comprising:

creating a plurality of differential pairs;  
converting a plurality of differential voltages in said plurality of differential pairs to a plurality of differential currents;  
coupling the plurality of differential currents to an edge-based receiver; and  
5 summing the plurality of differential currents to yield a single differential load.

20. The method according to claim 19, wherein the plurality of differential voltages comprise a plurality of differential voltages from a transmitter and a plurality of differential voltages from an edge-based receiver, respectively.

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21. The method according to claim 20, wherein the edge-based receiver comprises an edge processor operative to make decisions using a plurality of edges of a received data stream.

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22. A computer readable media having encoded thereon instructions causing a processor to convert a signaling format between a transmitter and an edge-based receiver by:

creating a plurality of differential pairs;  
converting a plurality of differential voltages in said plurality of differential  
20 pairs to a plurality of differential currents;  
coupling the plurality of differential currents to an edge-based receiver; and  
summing the plurality of differential currents to yield a single differential load.

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23. The computer readable media according to claim 22, wherein the plurality of differential voltages comprise a plurality of differential voltages from a transmitter and a plurality of differential voltages from an edge-based receiver, respectively.

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24. The computer readable media according to claim 23, wherein the edge-based receiver comprises an edge processor operative to make decisions using a plurality of edges of a received data stream.